The dust observations promise to be of special value in the study of weather types. In some weather types, not only are the dust values very abnormal, but the daily variation is in some instances quite abnormal also, indicating that the cloud or dust strata are differently situated from what they are in average weather, and also that their daily rise and fall occur at different times. In March 1890, the dust values show this very well: below are the three-hourly means for each of three different periods:—

Hour	1	4	7	10	13	16	19	22
First Period (12 *days*).								
Number per cubic centimetre . .	78	61	78	67	113	408	258	102
Second Period (3 *days*).								
,,	2867	1785	917	4733	4213	4295	3417	2533
Third Period (5 *days*).								
,,	65	25	37	19	20	28	93	76

During the third period of five days the weather was very remarkable. A large depression was slowly progressing eastwards to the north of Scotland, and the winds on Ben Nevis were blowing almost straight out from the centre, while the winds at sea-level were circulating in the normal direction. This is the usual type when low dust values are obtained; but it is difficult to quite account for the daily variation in the dust values being reversed, the higher values occurring at night, and the lower in the middle of the day. This and many other points have not been studied yet.

Dr. Buchan, in his recently published work on "Atmospheric Circulation," hinges his explanations of various atmospheric phenomena on the effect of solar and nocturnal radiation on the dust in the atmosphere, and accounts it one of the most important factors in the study of modern meteorology. The observations made at Ben Nevis Observatory clearly show that for observing the number of dust particles in the air, with a view to the observations being applied to the study of atmospheric phenomena, a true peak is of all places the best, because we can study not only the horizontal distribution of dust as brought by the different winds, but also, to a certain extent, the vertical distribution by the ascending and descending motions of the air past the place of observation.

ANGUS RANKIN.

ABSTRACT OF MR. A. RICCO'S ACCOUNT OF THE SUBMARINE ERUPTION NORTH-WEST OF PANTELLERIA, OCTOBER 1891.[1]

OF what happens in submarine eruptions we naturally know little. The evidence of Graham's Island (1831)[2] and the eruption off Pantelleria (1891), to the south of Sicily, and of the damaged telegraph cables and various surface phenomena [3] to the north, towards the Lipari Isles, shows us that such eruptions are not rare in the Sicilian district, and any records of these fleeting occurrences that we can get, in the way of observation and specimens, may well prove of increasing interest as others are obtained to compare with them.

Mr. A. Ricco has recently published [1] a detailed and illustrated account of the facts he was able to gather, concerning last October's submarine eruption north-west of Pantelleria, either in person or from local and other observers, he having reached the island during the latter part of the eruption. From this, at the suggestion of Prof. Judd, who has kindly sent me a copy, I extract the following:–

Pantelleria, an island (13·5 by 8 kilometres), situated between Sicily and Tunis, is entirely of volcanic origin.[1] The volcanic activity would at present appear to be a shade less marked than in the "Phlegræan Fields," west of Naples.

In Pantelleria we have exhalations of CO_2; hot springs (of which those at the lake called "Bagno del Acqua," among other things are, we are told, so rich in alkalies as to lather, and be used for washing clothes!), and fumaroles, some of which exhale steam harmless to vegetation, and with little if any specific effect on the rocks, while others give out sulphurous vapours at 88° C. or more, decomposing the rocks about them.

There is but doubtful record of seismic disturbances in the island prior to the summer of 1890. Then, however, earthquakes occurred, with elevation of part of the north coast, the cracking of cisterns, and an increase in the number and activity of the fumaroles, so that vineyards formed in some of the old craters were damaged. After more than a year's interval, earthquakes again commenced October 14, 1891 (three days before the eruption). These were accompanied by drying up of certain springs, and apparently a further rise on the north coast, with surface cracks in that district.

As the shocks were most violent and vertical at the little town of Pantelleria itself (at the end of the island nearest the scene of eruption), they caused considerable consternation; and if one went by the account of the overstrung inhabitants, who felt shocks not recognized by the seismoscopes, one might exaggerate their violence. On the other hand, the walls of the houses, which outside the town have frequently no upper story, are, on the whole, substantially built, so that the insignificant damage done is perhaps hardly a gauge. Part of the north coast (Fig. 1) appears to have been raised, in the two years, some 80 cm., the old sea-level being marked by a line of white incrustations; and we are told that, according to a recent estimate,[2] the tide in this part of the Mediterranean has an amplitude of but some 8 cm.; besides, there was the evidence of inhabitants who had bathed, boated, and fished along the coast. The submarine eruption (4 kilometres north-west of the island, Fig. 1) began on

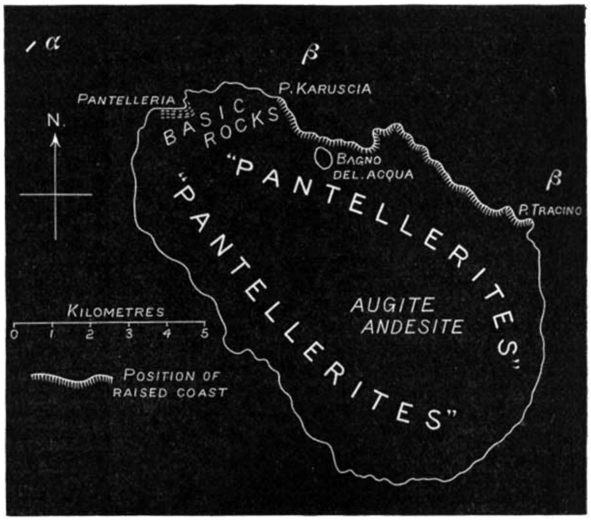

FIG. 1.—Map of Pantelleria, showing the position, according to Ricco, of (α) the submarine eruption of October 1891, and (β, β) of the raised coast.

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[1] *Annali dell' Ufficio centrale Meteorologico e Geodinamico*, ser. ii., Parte 3, vol. xi.

[2] (*a*) Lyell's "Principles of Geology"; and (*b*), for Bibliography, Johnston-Lavis's "South Italian Volcanoes," pp. 105–107.

[3] (*a*) "South Italian Volcanoes," pp. 64 and 65; and (*b*) Giov. Platania, "I Fenomeni Sottomarini durante l'Eruzione di Vulcano (Eolie) nel 1888–1889," *Att. Rend. Acc. Sc. Let. Art. Acireale*, n. ser., vol. i., 1889, pp. 16, tables 3.

[1] Foerstner, "Nota preliminare sulla Geologia dell' Isola di Pantelleria" (with geological map), *Boll. Com. Geol. d'Ital.*, 1881.

[2] Prof. G. Grablovitz, "Le isorachie della marea nel Mediterraneo," *Rendiconti della R. Accad. dei Lincei*, 16 Agosto, 1891.

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October 17, 1891, when the earthquakes abated, and water returned to some of the wells. The appearance of the sea, as viewed from the land, at first suggested the presence of some "great fish," and columns of "smoke" were seen. Those who visited the spot later (Fig. 2) found black scoriaceous bombs rising to the surface, along a line some 1 kilometre in length, extending north-east and south-west, which might well indicate a submarine fissure, the activity being specially great at certain points. Some of the bombs discharging steam ran hissing over the water with the recoil. Many were still very hot inside, fusing zinc (415° C.); and one was red-hot (in daylight), but below 800° C. Some pieces were thrown 20 m. in the air, as I gather, not so much by their momentum on reaching the surface as by the explosions occurring there. After the explosions the fragments sank, the material having a sp. gr. of about 2·4. The highest temperature of the water obtained was but 1½° C. above that of the surrounding sea. Ricco now questions the trustworthiness of the soundings made at the scene of eruption to a depth of 350 m. without feeling bottom, and he was told that fishermen had previously found but 160 m. of water there. Though some saw bubbles rise to the surface, the gases usually emitted in the case of subaërial eruptions were not detected in the sample of water collected, which Riccò suggests may be due to their having been taken into solution by the water lower down. However, there was a smell "as of gunpowder" at the spot; and the dark, basic, spongy matter of the bombs (previously described),[1] "the only solid material erupted," gives out when heated a sulphurous odour, a fact of which Mr. F. Chapman had previously informed me. The eruption terminated on October 25, and the erupted matter disappeared.

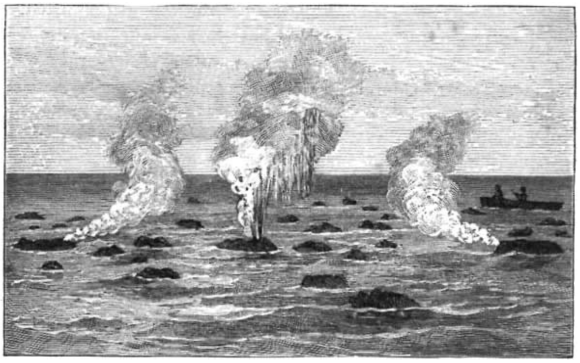

Fig. 2.—Part of a sketch of the submarine eruption near Pantelleria, October 1891. (After Ricco.)

I should add, in conclusion, that I have ascertained from Dr. Errera, who has charge of the seismological apparatus on the island, that the telegrams published in an English daily paper, as to renewed eruptions in the neighbourhood at a later date, were quite without foundation.

G. W. Butler.

March 22.

GIRAFFES.

The Zoological Society of London, as our readers know, have lost their last remaining Giraffe, and, for the first time since 1836, no example of this, one of the most wonderful of living Mammals, is to be seen in the Regent's Park Gardens. Nor does it seem likely that the loss can be easily restored. At the present time, owing to the Mahdists having closed the Soudan to trade, the Giraffe-market is very poorly supplied. Only one specimen of this animal, we are told, is for sale in Europe, and an exorbitant price is naturally asked for it. In South Africa the Giraffe is practically extinct, being only still met with in a few isolated localities nearly a thousand miles from Cape Town. In East Africa there are still Giraffes, and in places nearer the sea-board; but here, apparently, there are no means of catching them alive, as the natives do not understand how to do it. Here, however, it is that there appears to be most likelihood of obtaining a fresh supply. This will be an expensive business, but unless some steps are soon taken in the matter it seems that the younger generation of England will grow up without knowing what a living Giraffe is like. Their parents have been more fortunate. From the list given below, it will be seen that there have been 30 individuals of the Giraffe exhibited in the Zoological Society's Gardens since 1836, of which 17 have been born there, and 13 acquired by purchase. Of these 30, one was presented to the Royal Zoological Society of Ireland in 1844, five have been sold at prices varying from £450 to £150, and the remainder have died in the Gardens.

List of Giraffes that have lived in the Society's Gardens.

No.	Sex.	How obtained.	How disposed of.
1	♀	Imported May 24, 1836.	Died Oct. 15, 1852.
2	♂	Do. do.	,, ,, 29, 1846.
3	♂	Do. do.	,, Jan. 14, 1849.
4	♂	Do. do.	,, Jan. 6, 1837.
5	♂	Born in the Menagerie, June 19, 1839.	,, June 28, 1839.
6	♂	Do. do. May 24, 1841.	Presented to the Dublin Zoological Society, June 14, 1844.
7	♂	Do. do. Feb. 25, 1844.	Died Dec. 30, 1853.
8	♂	Do. do. April 22, 1846.	,, Jan. 22, 1867.
9	♂	Do. do. Feb. 12, 1849.	Sold April 27, 1850.
10	♀	Imported June 29, 1849.	Died Nov. 3, 1856.
11	♀	Do. do.	Sold Oct. 29, 1853.
12	♂	Born in the Menagerie, March 30, 1852.	,, March 29, 1853.
13	♀	Do. do. April 25, 1853.	Died May 21, 1872.
14	♀	Do. do. May 7, 1855.	,, Nov. 6, 1866.
15	♀	Do. do. July 16, 1859.	,, Dec. 2, 1859.
16	♀	Do. do. May·26, 1861.	Sold May 1, 1863.
17	♂	Do. do. Oct. 7, 1861.	Died Dec. 18, 1861.
18	♂	Do. do. May 8, 1863.	,, Nov. 18, 1863.
19	♂	Do. do. Sept. 24, 1863.	,, April 21, 1864.
20	♂	Do. do. Mar. 31, 1865.	,, April 3, 1865.
21	♀	Do. do. April 20, 1865.	Sold May 31, 1866.
22	♂	Do. do. Sept. 14, 1866.	Died Nov. 6, 1866.
23	♂	Do. do. Mar. 17, 1867.	,, June 20, 1881.
24	♀	Purchased July 23, 1867.	,, Sept. 12, 1869.
25	♂	Do. Jan. 5, 1871.	,, April 27, 1874.
26	♀	Do. Oct. 11, 1871.	,, May 21, 1878.
27	♂	Do. July 25, 1874.	,, Jan. 8, 1879.
28	♀	Do. do.	,, July 9, 1886.
29	♀	Do. do.	,, Nov. 24, 1891.
30	♂	Do. Jan. 27, 1879.	,, March 22, 1892.

NOTES.

The ordinary general meeting of the Institution of Mechanical Engineers will be held on Thursday evening, May 5, and Friday evening, May 6, at 25 Great George Street, Westminster The chair will be taken at half-past seven p.m. on each evening, by the President, Dr. William Anderson, F.R.S. The President will deliver his inaugural address on Thursday evening, after which the following papers will be read and discussed, as far as time permits:—Research Committee on Marine-Engine Trials: Report upon trial of the steamer *Ville de Douvres*, by Prof. Alexander B. W. Kennedy, F.R.S., Chairman (Thursday, and discussion continued on Friday). On condensation in steam-

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[1] Nature, vol. xlv p. 251.

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